

Effects of different types of soy sauce on the formation of heterocyclic amines in roasted chicken

ABSTRACT

The objective of the study was to determine the effect of different types of soy sauce and marinating time on the formation of heterocyclic amines (HCAs) in roasted chicken. Chicken breast samples were marinated with sweet, salty, light and dark soy sauce at 0, 3, 6 and 12 h (control treatment was the chicken without marinade). The concentrations of free amino acids, sugars and creatinine were determined before roasting while HCA concentrations were determined after roasting. All types of soy sauce significantly increased ($p \leq 0.05$) the concentration of HCAs in roasted chicken with increasing marinating time. The highest increment of total concentration of HCAs was found in samples marinated with light soy sauce (887%) followed by dark (375%), salty (193%) and sweet (169%) at 12 h. PhIP (2-amino-1-methyl-6-phenylimidazo(4,5-b)pyridine) showed a substantial reduction in samples only momentarily marinated with sweet, salty and dark soy sauce (0 h). Free amino acids were found to be more strongly correlated with the formation of HCAs than reducing sugars or creatinine.

Keyword: Heterocyclic amines; Soy sauce; Free amino acids; Reducing sugar; Creatinine; Roasted chicken